In the Claims:

1-13. (Canceled)

14. (Original) A method of growing a gallium nitride (GaN) epitaxial structure comprising:

a) depositing one or more structural epitaxial layers including a GaN buffer layer on a substrate; and

b) depositing a thermally assisted silicon nitride passivation layer on the one or more structural epitaxial layers before the GaN epitaxial structure is removed from an associated growth chamber.

15. (Previously Presented) The method of claim 14 wherein the depositing the passivation layer occurs immediately after the depositing the one or more structural epitaxial layers step while within the growth chamber.

16. (Original) The method of claim 14 wherein the depositing the passivation layer step is a thermally activated deposition process.

17. (Original) The method of claim 14 wherein the depositing the one or more structural epitaxial layers step comprises depositing a transitional layer on the substrate.

18. (Original) The method of claim 17 wherein the depositing the one or more structural epitaxial layers step further comprises depositing the GaN buffer layer on the transitional layer.

19. (Original) The method of claim 17 wherein the depositing the one or more structural epitaxial layers step further comprises depositing an aluminum gallium nitride (AlGaN) Schottky layer on the GaN buffer layer.

20. (Original) The method of claim 19 wherein the depositing the one or more structural epitaxial layers step further comprises depositing a GaN termination layer on the AlGaN Schottky layer.

21. (Original) The method of claim 17 wherein the depositing the one or more structural epitaxial layers step comprises depositing an aluminum nitride (AlN) sub-buffer layer on the transitional layer.

22. (Original) The method of claim 21 wherein the depositing the one or more structural epitaxial layers step further comprises depositing the GaN buffer layer on the sub-buffer layer.

23. (Original) The method of claim 22 wherein the depositing the one or more structural epitaxial layers step further comprises depositing an aluminum gallium nitride (AlGaN) Schottky layer on the GaN buffer layer.

24. (Original) The method of claim 23 wherein the depositing the one or more structural epitaxial layers step further comprises depositing a GaN termination layer on the AlGaN Schottky layer.

25. (Currently Amended) The method of claim 14 further comprising:

a) etching [[a]] source, gate, and drain regions of the passivation layer;

b) forming a source contact on the one or more structural epitaxial layers in the etched source region of the passivation layer;

c) forming a gate contact on the one or more structural epitaxial layers in the etched gate region of the passivation layer; and

d) forming a drain contact on the one or more structural epitaxial layers in the etched drain region of the passivation layer,

thereby forming a high electron mobility transistor.

26. (Currently Amended) The method of claim 25 wherein the ~~first, second, and third~~ source, gate, and drain regions of the passivation layer are etched using a wet chemical etch.

27. (Currently Amended) The method of claim 25 wherein the ~~first and third~~ source and drain regions are etched using a wet chemical etch and the second region is etched using a dry chemical etch.

28. (Original) The method of claim 14 further comprising:

a) etching a source and drain region of the passivation layer;

b) forming a source contact on the one or more structural epitaxial layers in the etched source region of the passivation layer;

c) forming a gate contact on the passivation layer; and

d) forming a drain contact on the one or more structural epitaxial layers in the etched drain region of the passivation layer,

thereby forming a metal-insulator-semiconductor field effect transistor.

29. (Currently Amended) The method of claim 28 wherein the ~~first and second~~ source and drain regions of the passivation layer are etched using a wet chemical etch.